XIII. Emergency Response Activities

A. General

For emergency flood control activities, the Rock Island District is divided into nine flood emergency areas, all of which had flooding problems except Dresden Area (Area 8). These areas are delineated on Plate 104 and are described below.

The Rock Island District Emergency Operations Center (EOC) was operating 24 hours a day (June 18 through August 31), with as many as 25 employees assigned to the office at one time. A total of 220 employees was deployed to field EOCs to provide assistance and technical advice to flood ravaged areas.

The Rock Island District's 1993 Flood fighting costs and costs associated with the Rock Island District's response to the Federal Emergency Management Agency (FEMA) flood recovery activities are shown in Table 30. The total expenditures were about $11.4 million.

Table 30
Rock Island District Flood Fighting Emergency Expenditures
Emergency Expenditures Contracted by the Rock Island District for FEMA
The Great Flood of 1993

Rock Island District	**Dollars**	**Dollars**
Great Flood of 1993 Flood Fighting Expenditures		
Labor		$1,584,000
Travel		157,000
Flood fight supplies/distribution		167,000
Overhead		289,000
Equipment rental contracts		925,000
Sandbags (13,790,000)		3,483,000
Polyethylene sheeting (10,000 rolls)		406,000
Miscellaneous		313,000
Rock Island District Response to FEMA Flood Recovery Activities		
Bottled water (463,000 gallons)	447,000	
Water containers (30,000)	369,000	
Portable toilets (2,100)	1,116,000	
Potable water hauling	900,000	
Generators, Pumps	717,000	
Non-potable water hauling	356,000	
Miscellaneous	210,000	
Rock Island District Response to FEMA Total	$4,105,000	$7,324,000
The Great Flood of 1993 Flood Fighting Totals	**$4,105,000**	**$7,324,000**

B. Clinton Area (1)

The Clinton Area (1) includes the area from the southern border of LeClaire, Iowa, north to the Rock Island District's northern limit at Cassville, Wis., on the Mississippi River, including Pools 11, 12, 13 and 14, on the Mississippi and Maquoketa, Wapsipinicon, Turkey and Little Maquoketa River basins in Iowa and the Apple, Plum, Platte, and Galena River basins in Illinois.

1. Advance Measures

On March 30 and 31, the Emergency Management Division held a seminar including field exercises to provide hands on training for area flood engineers at the Corps of Engineers. After completion of the seminar, the area flood engineers were encouraged to contact their respective areas/cities about potential spring flooding and the importance of advance measures of planning and preparation to minimize damage to vital facilities including, water treatment plants, sanitary and storm sewer systems.

Each city with a flood history was encouraged to establish a flood organization and written plan for conducting flood fighting operations and to develop plans for evacuations for certain areas if necessary. Most cities and communities have a flood emergency contingency plan ready for implementation when needed.

Cities contacted with major flood protection projects in the Clinton Area along the Mississippi River included Dubuque, Galena, Sabula, Savanna, Clinton, Fulton and Meredosia Levee and Drainage District. Cities without flood protection systems included: Camanche, Princeton, and LeClaire, Iowa; and, Albany, Cordova, Port Byron and Rapid City, Ill. Other cities along tributaries were encouraged to be prepared for flash floods by watching local TV stations, NWS updates and contacting the Corps of Engineers.

2. Flood Fight Activities

Early anticipation of flood fighting problems and activities by local communities aided them in procuring necessary supplies such as sandbags, polyethylene, and pumps. Area flood engineers provided technical assistance for potential problem areas. This included making recommendations for using the proper methods, materials and equipment for particular flood problem areas.

Based upon the past experience of the area flood engineers, information was provided to the communities regarding areas of potential seepage, sand boils and erosion potential. Information regarding emergency interior drainage treatment facilities was given to the communities. Technical assistance on the filling of sandbags, the proper use of polyethylene and the sizing and placement of portable pumps was also provided.

3. Evacuation Activities

Evacuation of residents was necessary in several communities including LeClaire, Iowa, and Albany, Ill. There were numerous other communities where basement flooding was a problem. Sandbagging operations protected many riverfront homes along the Mississippi River, in addition to other homes that were surrounded by flood waters. Several sanitary sewer systems along the river experienced seepage allowing excess water, quantities in millions of gallons, to go through

the sanitary treatment plants daily. Some residences in the floodplain moved out of their homes temporarily on their own.

4. Coordination

Daily communication occurred with local officials throughout the Clinton Area.

C. Quad-Cities Area (2)

The Quad-Cities Area (Area 2) includes the area north of Fairport, Iowa, to Lock 14 on the Mississippi River, including Pools 15 and 16, and the lower end of the Rock River basin extending to the mouth of the Green River in Illinois and the Quad-Cities metropolitan area.

1. Advance Measures

There were limited advance measures for the Quad-Cities Area. Advance measures primarily were limited to the procurement of sandbags. In addition, some reconnaissance preparations were made prior to the flood event.

2. Flood Fighting Activities

The flood fighting activities that were performed in the Quad-Cities Area included the sandbagging of residential, commercial and public buildings throughout the area. Stormwater and seepage pumping occurred at many locations. A levee stabilizing berm was constructed at one location. In addition, there were temporary levees and levee plugs constructed at locations as necessary. The closure structures, gatewells and valvewells on Corps of Engineers levees were closed in many locations. Some were closed for the first time. Boils were ringed at several locations throughout the flood emergency area.

3. Evacuation Activities

The Garden Addition area of Davenport was ordered to evacuate (300 people) due to the questionable condition of the levee. The levee had experienced some sloughing at one location and interior flooding occurred due to blocked or inadequate storm sewers. The levee did not fail. The duration of the evacuation was two weeks. The U.S. Post Office was temporarily moved to an alternate location. Many instances of short-term voluntary evacuation by residences occurred throughout the Quad-Cities Area.

4. Coordination

Scott County disaster services were well organized, making the coordination between counties, state, the National Guard, and the Corps of Engineers very good.

D. Burlington Area (3)

The Burlington Area includes the area from Niota, Ill., through Muscatine, Iowa, on the Mississippi River, including Pools 17, 18, and a portion of Pool 19 and the Edwards, Pope and Henderson River basins in Illinois, and the Iowa River basins below Wapello and Skunk River basin below Augusta, Iowa.

1. Advance Measures

Unlike spring snowmelt flooding--which allows time for flood forecasting--the unusual and extreme rainfall events of the summer of 1993 did not provide much time--if any--for advance flood notification. Hence, advance measures were very limited.

2. Flood Fight Activities

Corps personnel provided technical engineering support such as mechanical and structural design assistance; hydraulic and hydrologic forecasting; and geotechnical soil stability assessments. Field personnel worked in teams of two -- one member of each team was an engineer or an engineering technician. The Burlington EOC was staffed 24 hours a day. The center had two telephone lines, one fax machine, one radio base station and a computer modem to access the Rock Island District network.

3. Evacuation Activities

All the cabins/homes on the river side of the levee systems and Keithsburg, Ill., were evacuated. The evacuation of Green Bay Levee District was completed July 11, 1993. The levee district had designated one individual to develop an evacuation plan, get it approved by the levee district trustees, and brief all residents on its execution. The plan included a type of warning system to alert of levee failure (telephone tree); priority of notification based on threat; escape routes to use depending on the location of the levee failure; places to go for safety, shelter and accountability; and who to contact in an emergency. The evacuation plan was activated the evening of July 11 and worked well.

4. Coordination

Several agencies coordinated in the emergency effort. The Des Moines County Emergency Services Director (ESD) was provided office space in the Des Moines County Sheriff's Department building. Because the location was convenient and well known, the ESD was able to process requests much faster and assist other municipalities. The Sheriff's Department responded to civil "disturbances" that sometimes took place on the levees. Coordination took place with the state ESD and the Corps representatives in supplying large pumps to the critical sites in a timely fashion.

E. Quincy Area (4)

The Quincy Area includes the area from Niota, Ill., south to the southern end of the Sny Island Drainage District in Illinois, and Saverton, Mo., on the Mississippi River, including Pools 20, 21, 22, and a portion of Pool 19 and the Fox, Wyaconda, Fabius, North and South River basins in Missouri and the lower Des Moines River basin in Missouri and Iowa.

1. Advance Measures

There were no advance measures undertaken in the Quincy area.

2. Flood Fighting Activities

Due to the high Mississippi River stage forecast, the Area 4 emergency operations were activated from April 20 to April 28, 1993. A temporary field office was established at Lock and Dam 21. During this period, the emphasis was on riverside erosion of the river banks and the riverside levee slopes in several of the drainage districts. None of these areas were found to be of an immediate threat to the integrity of the levee systems.

June 24 the Quincy Area was mobilized due to a forecast of high Mississippi River stages. The drainage districts where flood fighting activities were conducted included Des Moines-Mississippi Levee, Mississippi-Fox River, Gregory, Union Township, Fabius River, Marion County, South River, Hunt-Lima Lake, Indian Grave, South Quincy, and Sny Island Levee. The major towns within the area include, Niota, Quincy, Hamilton, Warsaw, Ill.; Canton, LaGrange, Hannibal, Mo., Keokuk and Fort Madison, Iowa.

July 1, drainage districts and towns started raising their main stem sand levees by using bulldozers and pushing sand from the landside slopes. They placed polyethylene sheeting over the pushed up sand section and secured it with sandbags. On the clay levees, they constructed flashboards with bracing, backed with sandbags and raised the levee with the sandbags. The main focus during this phase was to raise the levee system to withstand a flood stage of 32 feet at the Quincy gage. The levee raises were from 3.5 feet to 4.0 feet.

In addition, during this period underseepage and through seepage became major problems. Many boils were located, and the ones that were moving material were ringed with sandbags. Of particular concern was the through seepage in the area where the sand levees were pushed up and the flood waters were over the elevation of the clay cores of the main stem levees. To assist in the control of this, the Corps contracted to furnish 12 wide-track bulldozers and furnished three Corps owned bulldozers to continually dress the landside slopes to minimize the sand erosion. The bulldozers were also used to place additional levee material where needed.

To meet the flood challenge, the Quincy Area Office grew to a maximum staff of 52 people. Technical assistance was provided to the towns and drainage districts on a 24-hour basis from July 2 to August 2. In addition, three geotechnical teams were established to provide geotechnical assistance in complex flood fighting problems. The Rock Island District distributed flood fighting material such as sandbags, polyethylene sheeting, snowfence, and pumps. A total of 6.9 million sandbags, 9,354 rolls of polyethylene sheeting and 907 rolls of snowfence were distributed to cities and drainage districts. The Quincy Area Office was closed on August 12, 1993.

In spite of all the efforts by drainage district officials, thousands of volunteer personnel and the Corps, the following levee systems were overtopped, as shown on Table 31.

Table 31
Drainage Districts in the Quincy Area

Location	Overtopped
Mississippi-Fox River Dist.	July 1, 1993
Union Township D. D.	July 7, 1993
Des Moines and Mississippi Levee District No 1	July 8, 1993
Gregory Drainage	July 8, 1993
Marion County D. D.	July 9, 1993
Hunt and Lima Lake D.D.	July 9, 1993
Niota, Illinois	July 11,1993
Indian Grave D.D. (Lower)	July 12,1993
Indian Grave D.D. (Upper)	July 13,1993
South River D. D.	July 13,1993
Fabius River D. D.	July 16,1993
Sny Island L. and D. D. (Upper)	July 25,1993

3. Evacuation Activities

The number of people that were evacuated from flood prone areas is shown in Table 32.

Table 32
Evacuation Activities

Location	Number of People
Alexandria, Mo.	479
Niota, Ill.	350
Meyer, Ill.	70
Hull, Ill.	529

4. Coordination

Coordination of the flood fighting and drainage efforts was conducted with 12 levee and drainage districts, nine towns/cities; six county defense directors; state emergency management personnel and National Guard personnel.

F. Waterloo Area (5)

Waterloo Area includes the Cedar and Iowa River basins from their tributary head waters in Freedborn and Mower Counties, Minn., southeastward across Iowa to their confluence in Louisa County where they empty into the Mississippi River as the Iowa River.

1. Advance Measures

Spring Flood Advance Measures. Snowmelt flooding resulted in flood emergencies in several towns along the Iowa and Cedar Rivers and their tributaries. Forecasts during the last week of March dictated the cities and towns of Cedar Falls, New Hartford, Waterloo, Evansdale, Vinton, Cedar Rapids, Marshalltown, Tama, Chelsea and Marengo be contacted concerning the flood forecasts.

Summer Flood Advance Measures. Continued above average precipitation resulted in Coralville Reservoir nearing full flood control pool capacity. With emergency releases eminent, the Johnson County, Iowa, Emergency Services Director was contacted the third week of June to coordinate flood preparedness and response activities. A flood coordination meeting was held at the county office building with Johnson County, Iowa City, Coralville and University of Iowa officials in attendance. The meeting provided a forum to discuss Coralville Reservoir operations, potential flooding, points-of-contact, flood-fighting supplies and resources, and distribution of information to the public.

2. Flood Fight Activities

Spring Flood Fight Activities. Flood Area Engineer support was provided by three flood-fighting teams dispatched to the Iowa and Cedar River basins. On-site contact was made with officials in Cedar Falls, Waterloo, Evansdale, Cedar Rapids, Chelsea, Tama, and Marshalltown. Portable pumps were provided to Tama, Chelsea, and Linn County Disaster Services. In Tama, a partially completed flood control levee project was intentionally breached to relieve interior flooding problems.

Summer Flood Fight Activities. On-site Flood Area Engineer support was provided the last week of June and first week of July to the Iowa City area. These on-site preparedness activities helped prepare the areas downstream of the Coralville Reservoir emergency spillway for the spillway releases which began to occur shortly after the July fourth weekend. Technical advice was provided to Iowa City, Coralville, University of Iowa and Johnson County officials concerning flood information, sandbagging efforts, and evacuation of flood prone areas. In early July a temporary EOC was established at the Coralville administration building to monitor high flow releases and rising pool elevations. Through the cooperation of the Johnson County Sheriff's Department, a temporary gage was set on Clear Creek at Tiffin, Iowa, to measure flash flows into the Iowa River below the Coralville Dam. This coordinated information was used to cut back flows, if possible, from the dam and to provide timely information to the flood fight effort protecting the Iowa City water plant and other flood prone areas in Iowa City and Coralville against sudden, higher river levels. Monitoring rising pool elevations allowed for successful

floodfighting activities in the Amana Colony area upstream of the dam. Sandbags were used to increase levee freeboard, a concrete wall was capped with an additional two feet of concrete, and portable pumps were used to remove interior rain water. The temporary EOC also served as a distribution point for sandbags and pumps to surrounding entities in the Iowa and Cedar River basins. Telephone communications were maintained with officials in Waterloo, Evansdale, Cedar Rapids, Marshalltown, Tama, Chelsea, Belle Plaine, and Marengo.

The Iowa River flood peak was followed down the Iowa River valley to Columbus Junction where Flood Area Engineer support was provided to the on-going extensive sandbagging effort. Downstream from Columbus Junction, the Communities of Wapello and Oakville were contacted. Coordination was established with the Louisa County Disaster Services, and flood-fighting efforts for the next three days were focused in the Oakville area on the Iowa River-Flint Creek Levee District No. 16 flood fight. Technical advice and supply coordination were provided through the peak of the Iowa River and Mississippi River flooding. Low areas in the levee were raised, boils were ringed, levee slump areas were stabilized, excessive seepage areas were matted, and the pump station was sandbagged to guard against increasing interior ponding, as the pumps struggled to keep up with the accumulated interior floodwaters.

3. Evacuation Activities

Spring Flood Evacuation Activities. The March/April flooding on the Iowa River prompted an as-needed evacuation of the flooded residential areas of Tama. The volunteer fire/rescue department headed the evacuation efforts.

Summer Flood Evacuation Activities. Extensive evacuation measures were needed during the summer flooding. The initial evacuations occurred in the Johnson County area due to Iowa River flooding below Coralville Reservoir. The notification of rural Johnson County residents was coordinated with the County Disaster Services and Sheriff's Department. The notification of Iowa City residents, primarily in the "never flooded before" residential area of Normandy Drive was coordinated with the Iowa City Police Department. Other homes in Iowa City and Coralville located on the riverfront were much more familiar with Iowa River flooding, and the residents evacuated as needed. The University of Iowa evacuated the Mayflower dormitory complex due to the Dubuque Street access being flooded. Downstream, near the Iowa City Airport, two trailer courts in the floodplain were partially evacuated.

Downstream at the Iowa River's confluence with the Mississippi River, the town of Oakville and surrounding rural Louisa County areas implemented a voluntary evacuation. Most residents heeded the voluntary evacuation notice. The areas ultimately did not flood, but the potential for a catastrophic levee break was high. Most of the affected farmers also moved livestock and stored grain away from the floodplain areas.

4. Coordination

The Flood Area Engineer primary coordination throughout the 1993 Flood was with Rock Island District EOC; University of Iowa, local cities, towns, counties and levee districts; and utility companies.

G. Des Moines Area (6)

The Des Moines Area includes the area of the Des Moines River basin in Iowa and the Skunk River basin above Augusta, Iowa.

1. Advance Measures

During the last week of June, coordination occurred between personnel from the Rock Island District Office of the Corps of Engineers and the City of Des Moines, Saylorville Lake, Red Rock Reservoir, Ottumwa, Iowa, and Van Buren County officials to prepare for a possible flood emergency. Information was provided to the local officials regarding the availability of sandbags, polyethylene and pumps in the event of an emergency. District Headquarters daily flood briefings were attended by field personnel to keep the emergency operation center informed of the situation in their respective areas of responsibility.

2. Flood Fight Activities

July 5 members of the Des Moines Area Emergency Office were requested to report to Wapello and Van Buren Counties to assist local officials in flood fighting efforts and to relay information obtained from the NCR EOC and the District's Engineering Division. All towns in Wapello and Van Buren Counties were visited on a regular basis. Coordination and information transfer was also accomplished by telephone and facsimile messages. Daily briefings with local news media were held in an effort to inform the public and control rumors and misinformation. Technical assistance was provided which resulted in protecting the Ottumwa Water Works, the downtown area on the left bank of the Des Moines River in Ottumwa, the City of Eddyville, lift stations in numerous communities and major transportation routes. A 24-hour levee surveillance was organized utilizing Iowa National Guard Units. Pumps, sandbags and polyethylene were distributed to Wapello and Van Buren Counties to assist in flood fighting. Many levees were raised and numerous reaches of emergency clay levees were constructed to protect large portions of Ottumwa.

Flood area engineers were dispatched to the Des Moines area July 9 to coordinate flood fighting efforts with the local communities. On the morning of July 11, the City of Des Moines lost its water supply due to the overtopping by the Raccoon River (Photo 9) of the water treatment plant's municipal levee. This left more than 250,000 people without water. For the next three weeks, Corps personnel assisted in flood recovery efforts which included: the monitoring of the city's levee systems, contracting emergency flood-fighting efforts at the failed southeast Des Moines River floodwall, and under the FEMA tasking under the Federal Response Plan, coordinating interior drainage pumping, the recovery effort at the water treatment plant, and providing potable water to the City of Des Moines. Corps personnel also participated in daily emergency staff meetings and press conferences.

3. Evacuation Activities

Extensive evacuations of flooded areas were coordinated by the Cities of Des Moines and West Des Moines, due to Des Moines River and Raccoon River flooding. Approximately 300

people were evacuated from the west end of Ottumwa July 6 after a railroad embankment washed out and flooded that area. Approximately 300 people were affected. The City of Eddyville was evacuated July 11 when leaks developed in the levee and it was considered unsafe to continue levee repairs until the river stage decreased. Approximately 1,000 people were affected. Scattered smaller evacuations took place in Van Buren County where there were no levees to protect communities from the rising waters in low lying areas. All cottage sites directly along the river had to be evacuated.

4. Coordination

In Des Moines, a Corps EOC was established at the City of Des Moines' EOC located at East High School. Daily 9 a.m. and 3 p.m. meetings were held in which Corps; city, county, and Federal agencies; Red Cross; National Guard; and utility companies coordinated flood fight and recovery efforts. These meetings were followed by press briefings.

A field EOC was established in the central fire station in Ottumwa. Constant coordination was maintained 24-hours per day with the NCR EOC, the State EOC and the Des Moines EOC via facsimile messages. Coordination was maintained with the Van Buren County EOC through telephone and telefax and the local news media through daily news briefings.

H. Rockford Area (7)

The Rockford Area includes the Rock River basin in Illinois and Wisconsin, except that area below the mouth of the Green River which is in the Quad-Cities Area.

1. Advance Measures

The advance measures in the Rockford Area included establishing and maintaining contact with local officials in the flood prone communities and levee districts.

2. Flood Fighting Activities

Flood fighting activities for both the lower Rock River basin and the upper Rock River basin were accomplished by local, county and state commissions and agencies. Rock Island District flood engineers met with personnel from the Villages of Hillsdale and Erie and Penny Slough and Meredosia Levee and Drainage Districts in Illinois and the State of Wisconsin Director of Field Services and Disaster Resources to discuss the flood situation.

3. Evacuation Activities

Evacuation activities were short term and voluntary.

4. Coordination

There was on going coordination between the area flood engineer and local, county and state officials and agencies.

I. Dresden Area (8)

The Dresden Area includes the area of the Illinois River basin from the Utica Bridge northeast to the westerly Will County line, near Dresden Island Lock and Dam. Also included is the Fox River from the Illinois-Wisconsin state line to the northern boundary of the basin. This area also includes a portion of the lower Fox River basin in Illinois.

There was no flooding in the Dresden Area during this event.

J. Peoria Area (9)

The Peoria Area includes the area of the Illinois River basin from the LaGrange Lock and Dam north to the Utica Bridge, 1.5 miles downstream from the Starved Rock Lock and Dam. This includes the LaMoine, Sangamon, Spoon, Mackinaw and Vermilion River basins.

1. Advance Measures

The advance measures in the Peoria Area included informing local communities and individuals of the availability of sandbags and the severity of local flooding.

2. Flood Fighting Activities

The City of Beardstown provided the Peoria Area field personnel office space, telephones, and fax capabilities in the Beardstown City Hall building. On a daily basis, the field office sent flood fighting technical assistance personnel to the levee districts within its area to provide assistance.

3. Evacuation Activities

Evacuation activities were not required in this area.

4. Coordination

There was on going coordination between the Peoria Emergency Area temporary field office, the NCR EOC, FEMA, IEMA and levee district personnel.

K. Lessons Learned

1. Discussion

The flood fighting activities taught many lessons to those involved. In an attempt to learn from the situations that occurred during this event, a questionnaire was given to field employees and supervisors in order to learn from this event and to be more prepared for future floods.

Field personnel (164 responses) were asked whether they had the resources to do their job properly, if prior to their flood duty, they had received training which prepared them for their assigned tasks; and if flood fighting training and other emergency responses would be beneficial

for future emergencies. Field personnel were also asked what major obstacles faced them while trying to do their jobs. Supervisors (39 responses) were asked whether they had the resources to continue their ongoing projects while their employees were detailed to flood duty.

2. Recommendations

Recommendations are based upon the responses that were received from both the field personnel and the supervisors. They are summarized below in four categories.

a. Flood Emergency Preparedness/Training
   - Conduct training exercises at least annually.
   - Have maps, plans and specifications readily available for field personnel.
   - Flood manuals should be up-to-date.
   - Provide video instructions to levee districts on the proper methods of flood fighting.

b. Emergency Operation/Management
   - Set clear goals, define responsibilities and authorities and provide briefings for flood area engineers and assistant flood area engineers.
   - Standardize administrative activities of EOC operations.
   - Activate and mobilize the EOC early.
   - Assign public relations personnel to work in the field during emergencies.

c. Communication
   - Transmit critical information to the field as quickly as possible.
   - Overlap shifts to facilitate exchange of information between shift personnel.
   - Utilize cellular telephones, fax, etc. to relay information between field personnel and EOCs.

d. Equipment
   - Provide adequate and appropriate equipment and supplies such as telephones, radios, flood gear, computers and cameras and give personnel proper training on the use of equipment.
   - Provide reliable and appropriate transportation for field personnel. Have contingency arrangements made with GSA and commercial rental agencies in advance.

XIV. Flood Damage Description

A. Discussion of Damages Experienced

Damage surveys have not been completed, but the best estimate at this time is that flood damages in the Rock Island District will exceed $1 billion dollars. More than two dozen levees in the Rock Island District eventually succumbed to the flood waters, flooding more than 190,000 acres of farm land and several small towns.

Due to funding and time constraints, detailed field data collection will be limited. The majority of the data will be collected from agencies such as Civil Defense Offices, U.S. Department of Agriculture, Federal Emergency Management Agency, State and local transportation offices, the Red Cross, etc. Damage categories will include: residential, commercial, industrial, public facilities, transportation, utilities and agricultural. The 1993 Flood damage data will be summarized in the Flood Plain Management Assessment of the Upper Mississippi and Lower Missouri Rivers and Tributaries Study Report, to be published in June 1995.